

419E Liquid



Premium Acrylic Conformal Coating

419E is a 1-part, UL 746E certified, acrylic conformal coating. It cures to a durable, flexible and smooth finish. It is easy to apply and can be handled in 15 minutes. It may be removed with appropriate strippers, or soldered through for repair or rework.

419E creates a robust moisture barrier that protects printed circuit boards in humid environments. It provides strong protection against moisture, corrosion, fungus, dirt, dust, thermal shock, short circuits, high-voltage arcing, and static discharge.



Features and Benefits

- Certified UL 746E (File# E203094)
- Certified IPC-CC-830C
- Xylene and toluene free
- Fluoresces under UV-A light
- Suitable for use with selective coating equipment

Available Packaging

| Cat. No. | Packaging | Net Vol. | Net Wt. |
|----------|-----------|----------|---------|
| 419E-1L | Can | 945 mL | 830 g |
| 419E-4L | Can | 3.78 L | 3.32 kg |
| 419E-20L | Pail | 18.9 L | 16.6 kg |

Contact Information

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Cured Properties

| | |
|--|---|
| Resistivity | $3.5 \times 10^{13} \Omega \cdot \text{cm}$ |
| Dielectric Strength | 1 100 V/mil |
| Dielectric Withstand Voltage | >1 500 V |
| Insulation Resistance | $1 \times 10^{12} \Omega$ |
| Moisture Insulation Resistance | $1 \times 10^{12} \Omega$ |
| Glass Transition Temperature (T_g) | 38 °C |
| CTE Prior T_g | 160 ppm/°C |
| Service Temperature Range | -65–130 °C |

Usage Parameters

| | |
|---|-------------------------------|
| Dry Time To Handle (1 coat) | 15 min |
| (2 coats) | 25 min |
| Minimum Recoat Time | 3 min |
| Recommended Film Thickness | 25–75 μm |
| Theoretical Coverage @ 25 μm | 93 176 cm^2/L |

Uncured Properties

| | |
|-------------------|-----------|
| Viscosity @ 25 °C | 160 cP |
| Density | 0.88 g/mL |
| Percent Solids | 29 % |
| Shelf Life | 5 y |
| Calculated VOC | 625 g/L |

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Application Instructions

Read the product SDS before using this product (downloadable at www.mgchemicals.com).

Recommended Preparation

Clean the substrate with Isopropyl Alcohol, MG #824, so the surface is free of oils, dust, and other residues.

Recommended Thinner

When thinning is required, use MG #4352 Thinner 2.

Brush

419E can be applied by brush for rework or touch-ups. Thinning is not required for most brush applications. Desired coating thickness can be achieved in a single application. Applied coating can be cured immediately.

Manual Spray Guns

Use a standard fluid nozzle gun with a minimum tip diameter of 0.8–1.0 mm. The settings listed below are recommendations; however, performance will vary with different brands:

| Inlet | Air flow | Air cap |
|-----------|------------|----------|
| 20–40 psi | 10–15 SCFM | 8–10 psi |

1. Dilute 1-part coating to 1-part thinner (MG #4352 Thinner 2). Adjust ratio if required.
2. Stir the coating gently, but thoroughly.
3. Spray a test pattern to ensure good flow quality.
4. Tilt the board at 45° and spray a thin even coat from a distance of 20–25 cm (8–10 in). Use spray-and-release strokes with an even motion to avoid paint buildup in one spot. Start and end each stroke off the surface.
5. Wait 3 min between coats to avoid trapping solvent.
6. Rotate the board 90° and spray again to ensure good coverage.
7. Apply additional coats until desired thickness is achieved (go to step 3).
8. Let dry for 15 min at room temperature before applying heat cure.

Dip Coat

Use a Ford or Zahn cup to monitor the viscosity of the coating, as the solvent will evaporate over time.

1. Hang the PCB on a dipping arm.

2. Slowly lower the PCB into a tank and leave immersed in the coating for 2 min to allow penetration.
3. Slowly withdraw the PCB from the tank at a rate of approximately 6" per minute.
4. Let dry for 3 min before applying additional coats or 15 min before heat cure.

Selective Coating

For higher volume applications, coating can be applied via selective coating equipment. The settings listed below are recommendations and performance will vary with different brands.

| Settings | PVA | Nordson Asymtek |
|-----------------|---------------|-----------------|
| Platform | PVA 650 | SL 940E |
| Valve | FCS300-ES | SC 280N |
| Dilution | 1:1 with 4352 | 4:1 with 4352 |
| Air Pressure | 0.5 psi | 80 psi |
| Fluid Pressure | 5 psi | 25 psi |
| Dispense Height | 10 mm | 12.7 mm |
| Pass Width | 5 mm | N/Av |
| Coating Speed | 100 mm/sec | 500 mm/sec |

Cure Instructions

Allow to dry at room temperature for 24 hours, or after letting sit for 15 minutes, cure the coating in an oven at one of these time/temperature options:

| | | | |
|-------------|------------|------------|-----------|
| Temperature | 65 °C | 80 °C | 100 °C |
| Time | 30 minutes | 15 minutes | 5 minutes |

Clean-up

Clean spray system and equipment with MEK or acetone, MG #434.

Storage and Handling

Store between -5 and 40 °C in a dry area, away from sunlight (see SDS).

Disclaimer

This information is believed to be accurate. It is intended for professional end-users who have the skills required to evaluate and use the data properly. M.G. Chemicals Ltd. does not guarantee the accuracy of the data and assumes no liability in connection with damages incurred while using it.

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